

NOTE ON THE ANATOMY OF *RESANIA*, GRAY, AND *ZENATIA*, GRAY.

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I HAVE recently been able to examine alcoholic specimens of *Resania lanceolata* (otherwise known as *Vanganella Taylori*), Gray, and *Zenatia Deshayesi*, Reeve, from New Zealand. These were collected where they had been thrown up by the waves, and were so permeated with fine siliceous sand that thin sections could not be cut for fear of ruining the microtome. They were, however, otherwise perfect, and, since the anatomy of these forms has not been described, it seems desirable to give some account of the more conspicuous features of their structure.

*RESANIA LANCEOLATA*, Gray.

In this very inequilateral form the posterior part of the valves is disproportionately short, and the pallial sinus is short, extending forward only to the thickened ray which passes downward from the umbonal region of the valve. The siphons are naked, slender, closely united to their very tips, the orifices nearly in the same plane and surrounded by small papillæ, much retracted in the specimens.

The mantle has a thickened edge, smooth for the most part, but, near the ends of the shell, more or less papillose, with rather distant papillæ. The mantle is completely open, except in the central portion of the dorsal margin, not being united even where its margins pass around the adductors. The foot is compressed, sharp-edged, pointed, large and muscular, with no obvious byssal groove, and of a lanceolate outline. Its edges are entire. The palpi are large, narrow, long, smooth externally, plicate internally, adherent near the small circular mouth. They extend beyond the posterior edge of the visceral mass, becoming distally free and twisted at the ends. The body is connected with the siphonal septum by a  $\Omega$ -shaped fleshy septum, from which, on each side, a smooth, fleshy, narrow flap, as long as the septum itself, hangs down into the branchial chamber. Outside these flaps, and seated on the lateral borders of the fleshy septum, are the gills. These present some peculiar features, the most obvious of which is that the gills of the two sides are not symmetrical; and, further, that on one side, and in some cases on both sides, the plicate laminæ are discontinuous.

The ctenidium of the left side is short and small, the outer lamina smaller than the inner, both dwindle to a point and cease before reaching the vertical of the visceral mass, and there is a distinct vacant space with no trace of a pendant lamina between the anterior termination of this part of the ctenidium and the sinus between the posterior parts of the palpi. Further forward, between the upper and lower palpi, a new lamina, corresponding to the inner direct and reflected lamina of the ctenidium, is developed and attains a respectable size, being wider than the palps and extended forward, diminishing in

size nearly to the front edge of the visceral mass. This was naturally taken to be a malformation, but examination of five adult specimens showed the arrangement to be similar in all of them.

The right ctenidium is continuous in all but one of the specimens. Its laminae are larger than those of the left side and extend forward, diminishing in size, between the palpi to a point opposite the middle of the visceral mass. In the exceptional specimen there is a discontinuity of the laminae, but the vacant space of the left side is not repeated on the right. The edge of the anterior segment of the inner direct and reflected lamina of the right side is bifurcate, in front of the anterior edge of the posterior segment.

The fleshy septum above described completely separates the anal and branchial chambers. The inhalent siphon opens into the latter by a circular opening capable of being closed by a sphincter muscle or arrangement of fibres. On either side, near this opening, is a large, long sensory lamina, situated on the mantle and extending forward, parallel with the thickened mantle-edge, nearly to the posterior edge of the foot, where the latter joins the visceral mass. The ligament is sunken, but not wholly internal; it is short and small. The resilium is not in contact with it, but is wholly internal, large, strong, and mesially constricted.

#### ZENATIA DESHAYESII, Reeve.

This species is as inequilateral as the preceding, but in a reverse direction, the longer end of the shell being the posterior, with a deep pallial sinus. The ligament is longer than in *Resania*, and the resilium rather smaller, but otherwise similar to that of *Resania*.

The siphons are naked, and completely united; but larger, laterally more compressed, and less cylindrical than in *Resania*. The siphonal openings are surrounded by conspicuous papillae.

The mantle-edges are thickened, smooth, and solidly united in front and forward on the ventral margin, half the length of the shell, to the pedal opening. The sensory laminae occur on the inner side of the mantle near the inner orifice of the inhalent siphon, but they are smaller, shorter, and more delicate than in *Resania*. The foot is quadrate, compressed, smooth, with entire edges; smaller, proportionally, than in *Resania*. The mouth is circular, and the palpi near it narrow and adherent to the surface of the body; they are long and large, their free ends extend behind the foot. The visceral mass and siphonal septum are connected, but in this case there is no fleshy septum between the ctenidia, but, as is more generally the case in Pelecypoda, the bases of the ctenidia join to form the partition between the anal and branchial chambers. The ctenidia are symmetrical, more coarsely plicate than in *Resania*, and extend forward, diminishing in size, a considerable distance between the palpi. There is no discontinuity; the discrepancy in size between the inner and outer laminae of each ctenidium is less marked than in *Resania*.

The heart, visceral organs, etc., do not present in either genus any distinctive peculiarities compared with other members of the Mactracea.

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